UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,058	07/25/2003	Mi-Suk Lee	2013P098	4145

8791   7590   03/12/2007

BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

EXAMINER
VO, HUYEN X

ART UNIT	PAPER NUMBER
2626	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

    A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

  1)☒ Responsive to communication(s) filed on <u>25 July 2003</u>.

  2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

  3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

  4)☒ Claim(s) <u>1-8</u> is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

  5)☐ Claim(s) _____ is/are allowed.

  6)☒ Claim(s) <u>1,2,4,5,7 and 8</u> is/are rejected.

  7)☒ Claim(s) <u>3 and 6</u> is/are objected to.

  8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

  9)☐ The specification is objected to by the Examiner.

  10)☒ The drawing(s) filed on <u>25 July 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

  11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

  12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)   4)☐ Interview Summary (PTO-413)
                                          Paper No(s)/Mail Date. _____.
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)   5)☐ Notice of Informal Patent Application
3)☒ Information Disclosure Statement(s) (PTO/SB/08)   6)☐ Other: _____.
    Paper No(s)/Mail Date <u>7/25/2003</u>.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2.   Claims 1-8 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

3.   Claims 1-8 are drawn to a device of a speech CODEC which estimates a pitch of an input speech signal. In order for a claimed invention to be considered statutory under 35 U.S.C. 101, it must be useful and accomplish a practical application. That is, it must produce a "useful, concrete and tangible result" *(State Street, 149 F.3d at 1373-74, 47 USPQ2d at 1601-02)*. In the present case, the final result of claims 1 and 4-5 only refer to processing and analyzing the input speech signal to determine a candicate pitch (see the claims). As such, claims 1-5 are directed to non-statutory subject matter. The dependent claims fail to overcome the 35 U.S.C. 101 rejection directed towards independent claims 1 and 4, and thus, are also directed to non-statutory subject matter.

4.   Claim 8 is drawn to a "program" *per se* as recited in the preamble and as such is non-statutory subject matter (*computer-readable medium is defined as a carrier wave in the specification*). See MPEP § 2106.IV.B.1.a. Data structures not claimed as embodied in computer readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer.

See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure

per se held nonstatutory). Such claimed data structures do not define any structural

and functional interrelationships between the data structure and other claimed aspects

of the invention, which permit the data structure's functionality to be realized. In

contrast, a claimed computer readable medium encoded with a data structure defines

structural and functional interrelationships between the data structure and the computer

software and hardware components which permit the data structure's functionality to be

realized, and is thus statutory. Similarly, computer programs claimed as computer

listings *per se*, i.e., the descriptions or expressions of the programs are not physical

"things." They are neither computer components nor statutory processes, as they are

not "acts" being performed. Such claimed computer programs do not define any

structural and functional interrelationships between the computer program and other

claimed elements of a computer, which permit the computer program's functionality to

be realized.

Claim Rejections - 35 USC § 102

5.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6.   Claims 1-2, 4-5, and 7 are rejected under 35 U.S.C. 102(e) as being anticipated

by Ehara (US 6804639).

7.   Regarding claims 1 and 4, Ehara discloses an open-loop pitch estimation device

of a speech CODEC which estimates a pitch of an input speech signal, the device

comprising:

an autocorrelation function calculation unit which calculates a normalized

autocorrelation function from a perceptual weighing filtered speech signal (*element 201*

in figure 4);

a maximum autocorrelation function and a lag estimation unit which receives the

autocorrelation function and estimates a maximum autocorrelation function, a lag having

the maximum autocorrelation function, candidates for the maximum autocorrelation

function and lags corresponding to the candidates for the maximum autocorrelation

function (*col. 18, lines 22-67*);

a pitch candidate decision unit which decides a candidate for a pitch by using the

ratio of the estimated maximum autocorrelation function to the candidates for the

estimated maximum autocorrelation function, and the ratio of the lags having the

estimated maximum autocorrelation function to the lags corresponding to the

candidates for the estimated maximum autocorrelation function (*col. 18, lines 22-67,*

maximum auto-correlation candidates are determined. The maximum candidates

among these maximum candidates is used in calculating the threshold value); and

a pitch estimation unit which estimates a pitch between the candidate for a pitch

and the lag corresponding to the estimated maximum autocorrelation function by using

a pitch of a previous frame of the speech signal (*col. 12, lines 35-48*).

8.   Regarding claims 2 and 5, Ehara further discloses the device of claim 1, wherein

the maximum autocorrelation function and lag estimation unit estimates the maximum

autocorrelation function among the normalized autocorrelation functions and determines

maximum autocorrelation functions prior to the estimated maximum autocorrelation

function as the candidate for the maximum autocorrelation function (*col. 18, lines 22-67,*

normalized auto-correlation).

9.   Regarding claim 7, Ehara further discloses the method of claim 5, wherein step

(d) is characterized by estimating a lag that is nearest to the pitch of the previous frame

among candidates for a pitch by using the pitch of the previous frame (*col. 12, lines 35-*

48).

Allowable Subject Matter

10.   Claims 3 and 6 are objected to as being dependent upon a rejected base claim,

but would be allowable if rewritten in independent form including all of the limitations of

the base claim and any intervening claims. The following is an examiner's statement of

reasons for allowance: Ehara fails to specifically disclose wherein the pitch estimation

unit calculates K(d.sub.x) for the candidates for the estimated maximum autocorrelation

function by a formula K(d.sub.x)=a K.sub.log(d.sub.x)+(1-a)K.sub.corr(d.s-ub.x), x=1, 2, 3, . . . , I and estimates a lag that is nearest to the pitch of the previous frame between a lag having K(d.sub.x) that is smaller than a predetermined threshold and the lag having the maximum autocorrelation function, wherein a denotes a predetermined weight, K.sub.log(d.sub.x) is calculated by a formula K.sub.lag(d.sub.x)=.vertline-e.[d.sub. ax/d.sub.x+0.5]-d.sub.max/d.sub.x.vertline., I denotes the number of the candidate for the maximum autocorrelation function prior to the estimated maximum autocorrelation function, d.sub.x denotes a lag of the candidate for the maximum autocorrelation function, and K.sub.corr(d.sub.x) is calculated by a formula K.sub.corr(d.sub.x)=.vertl- ine.1-R(d.sub.max)/R(d.sub.x).vertline..

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lakaniemi et al. (US 6199035) and Peng et al. (US 6415252) are considered pertinent to the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huyen X. Vo whose telephone number is 571-272-7631. The examiner can normally be reached on M-F, 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Richemond Dorvil can be reached on 571-272-7602. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HXV   2/24/2007

***